PABLO NWR
NARRATIVE REPORT - 1967

PABLO NATIONAL WILDLIFE REFUGE
NARRATIVE REPORT

January 1, 1967 to December 30, 1967

REFUGE PERSONNEL

Joseph P. Mazzoni, Refuge Manager, Moiese, Montana
Frank L. Kenney, Refuge Manager, Charlo, Montana

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF SPORT FISHERIES AND WILDLIFE
FISH AND WILDLIFE SERVICE
Charlo, Montana

C O N T E N T S

PABLO NATIONAL WILDLIFE REFUGE
Narrative Report

January 1, 1967 to December 30, 1967

I. GENERAL

A. Weather Conditions

Unlike Ninepipe, with its numerous potholes to buffer sudden weather changes, Pablo has only the inlet slough and a few, small man-made catch-basins which provide open water after the main part of the reservoir freezes over its drains. But even these eventually become unfit for waterfowl use by drying up. Consequently, weather conditions have a direct effect on waterfowl populations.

An early ice break-up invited waterfowl use in February, 1967. But after a fairly wet spring, exceedingly dry conditions during the summer months put heavy demands on the reservoir causing a complete drawdown by late August. As shown in a chronological chart in the next section on water conditions, all of these circumstances hand an immediate effect on waterfowl use.

B. Habitat Conditions

1. Water for Pablo reservoir originates with the Jocko Lakes but depends on contributions from three major reservoirs and numerous mountain streams along the fifty-mile course of its feeder canal for the bulk of its storage. In addition, water is frequently pumped at considerable cost from Kerr dam for irrigation purposes.

When full, this reservoir holds a maximum of 27,100 acre feet. This water, in turn, is spread over the irrigable portions of 150 square miles of the Flathead Valley. This year only 17,910 acre feet were stored. With one of the driest summers on record, the demand was prodigeous. Even the large amount of water pumped from Kerr dam did not save the reservoir from a complete draw-down. Throughout the year, the reservoir was below a recent six-year mean in all but two months.

Below, the reservoir elevations are correlated with other events throughout the year for the purpose of comparison:

Month	1967 water levels	6-year mean average	Deviation	Remarks
January	3184.4	3190.7	minus 6.3	Reservoir low and ice-bound. No waterfowl use.
February	3186.7	3193.9	minus 7.2	
March	3186.7	3190.8	minus 4.1	Ice broke up March 1. 3,500 ducks on water.
April	3191.6	3199.0	minus 7.4	
May	3200.5	3204.1	plus 3.6	Water from higher reservoirs dumped into Pablo in anticipation of heavy run-off.
June	3207.3	3206.5	plus 0.8	
July	3207.3	3206.5	minus 8.4	Long summer dry spell began. 2,300 ducks using refuge. Over 500 geese on exposed shores.
August	3179.0	3194.8	minus 15.8	
September	3185.0	3194.6	minus 9.6	
October	3187.6	3190.4	minus 2.8	Fall migration of 15,000 ducks. Over 3,000 geese.
November	3190.0	3190.6	minus 0.6	Freeze up Nov. 25. 1,200 ducks, 200 geese. early in Dec. By 2nd week no waterfowl use.
December	3190.0	3190.6	minus 0.6	

2. Food and Cover

Heavy grass cover remained on most of the shores for winter protection and early nesting activities. Many thickets of willow, caragana, Russian olive and wild plum provide extra shelter throughout the year. With the adjacent private and state-owned wheat-farming operations, Pablo is undoubtedly the best pheasant habitat in Flathead Valley. In fact, it and Ninepipe, if the present farming trends toward potato raising and grazing cattle continue, might someday be the only good upland game bird habitat.

One-third of the Montana Fish and Game Departments 350 acres of wheat was left standing and furnished feed for ducks

until April. The ducks fed on these fields all winter, even though the reservoir was entirely ice-covered, flying to and from Flathead lake.

Geese made good use of the exposed shores, after the drawdown, feeding on the tender forbes that came up through cracks in the sun-baked clay. But, with the lack of aquatic vegetation, a definite drop in the number of diving ducks was noteable.

II. WILDLIFE

A. Migratory Birds.

1. Whistling Swans in numbers varying between 1 and 24 were on the refuge from October 15 to December 10. No other sightings were reported. This is no index on population trends, however. More than a hundred swans were counted on one occasion at South Bay on Flathead Lake, when none had been seen on Pablo for several weeks.

2. Canada Geese. The goose-nesting island was left high and dry on the shore of the reservoir by exceedingly low water elevations. For the first time since it was built in 1958, it produced no goslings. The flightless goose banding operation in June corroborated this by yielding nothing but adults. Irrespective of this, use-days remain at a very high level. From a peak during the fall migration of more than 3,000 geese, close to a thousand remained until the late November freeze-up.

3. Snow Geese. Only 10 were known to have used the area for a brief period late in October.

4. Ducks. Duck-use showed a decline from almost 2½ million days-use in 1966 to less than one million in 1967. Spring use in 1967 was high. The drop took place during the summer and fall when reservoir levels rapidly diminished.

Below, the 1967 use-days for each of the major species are compared as percentages:

Mallards	55%
Widgeon	12%
Pintail	9%
Ring-necked	7%
Merganser	4%
Blue-winged teal	3%
Redhead	3%
Shoveller, Gadwall, Canvasback	2%

A production of only 380 ducklings was recorded for this year as compared to well over a thousand in 1966. This reduction is attributed to a lower breeding population and fluctuating water levels during the nesting season. Unlike Ninepipe, with its islands and emergent vegetation, Pablo reservoir has a relatively smooth basin. When reservoir levels are low, there is virtually no cover between the grassy upland and the water. It is significant that most of the nesting takes place near the small catch-basins across the inlets in the southwest portion of the refuge. These small dikes were built in 1937. Since that time, at the insistence of the project engineer, each dike was breached. However, the basins still retain water, and these are very important to nesting waterfowl.

5. Coot. Due to low water conditions, very few coot used the area. No coot broods were seen.

6. Water and Marsh Birds. Normal numbers of these birds were present throughout the summer. Nothing unusual to record.

7. Shorebirds, Gulls and Terns. A handsome black-bellied plover was seen in late July. In the fall, hundreds of ring-billed gulls converged on the area to harvest stranded fish as the reservoir was drained.

B. Upland Game Birds.

1. Ring-necked Pheasants. Approximately 20 broods were counted through the early summer months, an unusually high number for Pablo. The resident population was augmented by several plantings of both male and female pheasants from the state game farm. Many of the young pheasants planted this year did not survive until the hunting season. Dog and road kills were frequent. The manager received bands from many areas which he turned over to the state biologist. One small banded hen was rescued from dogs by Job Corpsmen, another by a house wife. Three bands were turned in by C. J. Henry, and so on.

2. Gray Partridges. None seen during the year on Pablo.

C. Big Game. White-tailed deer were frequently mentioned in the narrative reports of the late 1930's, and are included in the original mammal lists. Since that time, however, no mention is made of the deer or any other big game animals.

This is not easy to explain since much of Pablo seems to be very good habitat. The upland, particularly the west side, is broad, well-grown with such browse plants as willow,

Russian olive, wild plum and mulberry.

Historically, big game was plentiful in Flathead Valley. David Thompson in 1809 and Alexander Ross in 1824 were able to feed large fur companies with game meat. Big game animals were specifically mentioned in their letters of the Flathead Valley.

Changes in land use, from grazing to farming may have been a factor in more recent years, though much of Flathead Valley land is currently being returned to grazing purposes. Unquestionably, the biggest cause is the lack of any control over hunting by Indians on the reservation. Restricted only on the use of artificial lights and the selling of game meat, a tribal member may kill as many big game animals as he pleases at any time of the year.

According to a recent study by the University of Montana, most Indian families consider that one elk and from three to five deer furnish enough meat for a year's supply, even if no other meat is available. This does not mean that all of the families hunt. This study indicates that only 50% hunt at all. Of the 51 families interviewed, 5 shot over half the deer. Such hunters may take as many as 25 deer and 30 elk in a single year. (Richard 1966)

D. Furbearers, Predators and Other Mammals.

1. Coyotes. A pair and a single were seen during the fall and early winter. The large male coyote was scavanging the remains of wounded ducks on the ice.

2. Beaver. The trapper, Ed Petticrew, said he caught 14 beaver on Pablo. This figure seems extremely high for the number of lodges, cuttings, caches or scent mounds found. He received an average of $9.50 for each pelt, a far cry from the $70 tops of twenty years ago.

3. Muskrats. Very few in the area due to water conditions.

E. Hawks, Eagles, Owls, Magpies, Crows and Ravens.

1. Hawks. Marsh hawks were the most commonly seen of this group. The Rough-legged hawks were in much smaller numbers the winter of 1967 than 1966.

2. Eagles. Small numbers of both bald and golden were on the refuge early in 1967. The fall migration, however, brought in only 4 bald eagles and no golden.

F. Other Birds. Numerous belted kingfishers were seen on and

near the refuge. One flock of about 16 evening grosbeaks were seen in the fall. Both cliff and barn swallows were numerous, nesting under the canal bridges.

G. Fish. Rainbow trout fingerlings have been planted each year in the early spring. These fish do remarkably well, attaining a good catchable size by August. Those which survive the winter may reach 2½ to 3 pounds in the second year. However, for the past two, consecutive years, irrigation demands have caused the reservoir to be completely drained. It is unlikely the Montana Fish and Game Department will continue to plant trout under these conditions in Pablo, and the reservoir will return to a warm water fishery. Excellent catches of yellow perch and largemouth bass are frequently reported.

H. Reptiles. Painted turtles and garter snakes are very common.

I. Disease. Nothing to report.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development.

1. Fences. Approximately 1,080 rods of boundary fence were renovated by Job Corpsmen supervised by two experienced men from the Bison Range. All materials except the wood stretch posts were furnished by the Corps. This fence extends from the north entrance gate east and south to the southeast entrance of the refuge.

In addition, Permittee, Frank Webseter, using materials furnished by the refuge, built 80 rods of fence in the southwest corner of the refuge to allow his cattle much easier ingress and egress to the west pasture.

Managers Kenney and Augsburger also built a new interior fence extending about 70 rods from the southeast corner of the refuge to the highwater line. This drift fence is designed to provide a means of rotating the grazing use of the land.

With the help of the corpsmen, Manager Kenney was able to remove all of the old, unsightly fences on the refuge. During this same cleanup, most of the old pheasant shelters were also hauled to the dump and burned.

2. Appearance. The old dump and many old car bodies were buried by refuge personnel.

3. Signs.

3. Signs. Bison Range personnel refinished the fishermen's warning memorial sign and replaced it near the dangerous inlet instructure.

4. Goose-nesting Platforms. With the help of three local sportsmen, seven goose nesting platforms were built and fastened in trees along the south shore line. Weldwire was fashioned into baskets which were o foot deep, 2 feet wide and 4 feet long. The baskets were lined with burlap, then filled with a mixture of bark and earth. The bark was hauled from the nearby sawmill. It is planned to replenish this nesting material each year.

B. Maintenance. Routine fence repairs, posting and clean-up were carried on during the year.

C. Plantings. None.

D. Control of Vegetation.

About 53 acres of Canada thistle was sprayed in the southeast corner of the refuge. This was a badly infested area that could not be reached during the previous summer due to high water. A 90% kill was accomplished. It is tentatively planned to spray about 60 acres directly east of this area, near the new diagonal fence in 1968.

E. Fires. Due to the extreme fire hazard caused by unprecidented dry weather, the refuge was closed for the first two weeks of September to all public use.

IV. RESOURCE MANAGEMENT

A. Grazing.

This year Frank Webster's herd of about 70 cattle were turned in east of the main dike to graze the east and north pastures preserving the grass along the south shore for nesting and winter cover.

The new drift fence, extending from the southeast corner of the refuge, across the dike to a point just below the high-water line, was effective at least early in the grazing season. Later, after the shores below the fence became firm enough, many of the cattle moved into the south pasture. By

this time, however, the grass had gotten a good start and will provide good winter and nesting cover during the following seasons.

In 1967, Webster erected a new fence which will let the cattle move around the upper end of the inlet, into the west side of the refuge. Previously, due to the position of the old fence, across a deep inlet, this area was inaccessable to cattle while the water level of the reservoir was high. Now, the cattle can be easily moved into this area. Since the old fence is still in place, they can be kept here by merely closing the gate.

This fence in the southwest portion of the refuge, and the drift fence in the southeast part, will make management of the grazing much easier in the future.

B. Haying. None.

C. Fur Harvest. Ten muskrats and 14 beaver were reported trapped by the Indian trapper.

D. Commercial Fishing. None.

V. FIELD INVESTIGATIONS AND APPLIED RESEARCH

A. Progress Report.

1. Census. For the first time, pair counts were made on Pablo. In the past, the production of the refuge was based entirely on the brood count. This year, pair counts provided supporting information, particularly on the species composition of the breeding population. Practice, plus a much improved inventory plan will provide much better information on breeding pairs in future counts.

2. Banding. No ducks were banded on Pablo this year. Late in June, a goose trap was built by the Montana Fish and Game Department. Three men from the Bison Range, and the game management agent assisted in a drive which yielded only nine geese. No goslings were among those caught. Most of the other geese were able to evade being caught by diving or flying.

3. Aquatic Plant Survey. No plants collected on Pablo this year.

VI. PUBLIC RELATIONS

A. Recreational Uses. For the second consecutive year, Pablo has been completely drained. This, of course, affected fishing. Several thousand planted in the early spring would have provided very fine rainbow trout fishign during the late summer and in years to come. But during the rapid decline in the reservoir level in August, and the subsequent complete drawdown, all of them were lost. Most of the fishing was done below the outlet structure in late August and during September when the trout tried to escape. The fact that these fish weighed as much as a pound and a half is evidence of the potential of this reservoir, if a minimum pool could be maintained at about the 3,190.0 level.

Undoubtedly, the Montana Fish and Game Department will be reluctant to plant any more rainbows in this reservoir, and it will revert to a warm water fishery, again.

B. Refuge Visitors. See Ninepipe Narrative Report.

C. Refuge Participation. See Ninepipe Narrative Report.

D. Hunting. Goose hunting on lands adjacent to the refuge were excellent during the waterfowl hunting season. Ducks, however, due to low reservoir levels were scarce. Very poor duck hunting was reported on lands adjacent to the refuge until late in December, when large numbers of mallards from Flathead Lake concentrated on the mature stands of grain.

E. Violations. It is believed that frequent patrols by refuge and game department personnel were effective in keeping violations to a minimum. No cases reported for this year.

VII. OTHER ITEMS

A. Items of interest. The first white man known to have visited the Flathead Valley was David Thompson, trader for the Northwest Fur Company. In the hills near Flathead Lake, he was impressed enough with the wildlife to make the following notes in his diary:

> March 13 (1810).."saw about a dozen sheep, sorely wounded one with shot..."
>
> March 14 "...Killed 1 Duck, 3 grey Geese and 1 Swan--plenty of Geese and Ducks..."

March 24 ". . .saw 5--60 Sheep in a herd...Saw a few Geese and a Flock of Swans with a few Ducks but killed none, they were too shy-- Geese are all paired, the Ducks mostly the same, but the Swans are still in small Flocks."

Thompson also reported "plenty of chevruil" (the feminine term for roe deer in Eurppe. The French Canadian voyageurs applied the term to mule deer. While at Flathead Lake he traded for beaver, marten and mink furs the Indians had trapped.

The above information was taken from A Study of the Big Game Animals of the Flathead Indian Reservation, by Jim Earl Richard.

B. Photographs

1. Job Corps—Refuge fencing project.

2. Student Assistant Bill Bradley placing fire danger barricades.

3. Trout fishermen at Pablo.

SIGNATURE PAGE

Submitted by:

Bruce L Kenney
(Signature)

Refuge Manager
(Title)

Date: 2/5/68

Approved, Regional Office: JW VB

Date: MAR 19 1968

JW Carl Crawford
(Signature)

Assistant Regional Director
(Title)

Approved, National Bison Range:

Date: 2/5/68

Donald P. Waggoner
(Signature)

Refuge Manager

3-1750
Form Nh-1
(Rev. March 1953)

WATERFOWL

REFUGE Pablo MONTHS OF Sept. thru TO Dec., 19 67

(1) Species	(2) Weeks of reporting period									
	9/3-9/9	9/10-9/16	9/17-9/23	9/24-9/30	10/1-10/7	10/8-10/14	10/15-10/21	10/28-10/28	10/29-11/4	11/5-11/11
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling							5	5	24	1
Trumpeter										
Geese:										
Canada	1,150	1,150	1,050	1,050	1,100	3,037	2,300	2,600	860	1,020
Cackling										
Brant										
White-fronted										
Snow								10		1
Blue										
Other Total Geese	1,150	1,150	1,050	1,050	1,100	3,037	2,300	2,610	860	1,021
Ducks:										
Mallard	500	500	600	600	900	3,000	8,000	8,000	8,000	10,000
Black										
Gadwall										
Baldpate	200	200	1,200	1,200	900	1,300	2,000	4,000	4,000	100
Pintail	50	50	50	50	50	50	1,000	500	500	150
Green-winged teal	50	50	50	50	100	250	800	800	800	800
Blue-winged teal	50	50	10	10						
Cinnamon teal										
Shoveler	50	50								
Wood	10	10	10	10						
Redhead	50	50	50	50	30	100	400	400	400	40
Ring-necked	20	20	20	20		2,000	2,000			1,500
Canvasback	20	20				50	50			
Scaup	50	50				200	200			
Goldeneye	20	20	20	20		10	50			
Bufflehead	10	10	10	10						20
Ruddy	10	10	10	10						
Other H. Merg.					20	20	20			10
C. Merg.	20	20	50	50	100	100	300	300	300	300
Total Ducks	1,110	1,110	2,080	2,080	1,700	7,080	14,820	14,000	14,000	12,920
Coot:										
Coot	100	100	150	150	100	500	500	500	500	200

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(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Pablo MONTHS OF Sept. TO Dec., 1967

(1) Species	(2) Weeks of reporting period: 11 (11/12-11/18)	12 (11/19-11/25)	13 (11/26-12/2)	14 (12/3-12/9)	15 (12/10-12/16)	16 (12/17-12/23)	17 (12/24-12/30)	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	(4) Production: Estimated total
Swans:											
Whistling	1	19		22					539		
Trumpeter											
Geese:											
Canada	1,020	1,660	20	200					127,519		
Cackling											
Brant											
White-fronted											
Snow									77		
Blue											
Other									127,596		
Ducks:											
Mallard	10,000	10,000	50	1,000					425,250		
Black											
Gadwall											
Baldpate	100	100		20					107,940		
Pintail	150	300		30					20,510		
Green-winged teal	800	800		80					38,010		
Blue-winged teal									820		
Cinnamon teal											
Shoveler									700		
Wood									280		
Redhead	40	40		20					16,710		
Ring-necked	1,500	1,500							60,060		
Canvasback									940		
Scaup									3,500		
Goldeneye									1,160		
Bufflehead	20	20		20					200		
Ruddy									280		
Other H. Merg.	10	10							540		
C. Merg.	300	300							14,980		
Total Ducks	12,920	13,170	50	1,170					687,380		
Coot:											
Coot	200	200							22,400		

Reservoir Levels Lowered

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	539	24	
Geese	127,596	3,037	
Ducks	687,380	14,820	
Coots	22,400	500	

SUMMARY

Principal feeding areas: Nearby private and state-owned grain fields

Principal nesting areas:

Reported by: [signature]

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-175
Form Nn-1
(Rev. March 1953)

WATERFOWL

REFUGE PAB LO MONTHS OF May Thru August, 19 67

(1) Species	(2) Weeks of reporting period 1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	15	15	15	15	15	80	80	80	80	80
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	50	50	50	50	50	500	500	500	500	500
Black										
Gadwall						50	50	50	50	50
Baldpate	30	30	30	30	30					
Pintail						100	100	100	100	100
Green-winged teal						20	20	20	20	20
Blue-winged teal						200	200	200	200	200
Cinnamon teal						20	20	20	20	20
Shoveler	10	10	10	10	10	30	30	30	30	30
Wood						10	10	10	10	10
Redhead	10	10	10	10	10	20	20	20	20	20
Ring-necked	50	50	50	50	50	10	10	10	10	10
Canvasback						10	10	10	10	10
Scaup										
Goldeneye										
Bufflehead										
Ruddy	100	100	100	100	100					
Other C. Merganser	10	10	10	10						
Total Ducks	260	260	260	260	260	970	970	970	970	970
Coot:	200	200	200	200	200					

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(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE PABLO MONTHS OF May Thru 31 August, 1967

(1) Species	(2) Weeks of reporting period: 11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	80	80	80	80	80	511	511	511	16,646	0	0
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard	500	500	500	500	500	700	700	700	51,450	26	166
Black											
Gadwall	50	50	50	50	50	70	70	70	4,970		
Baldpate						140	140	140	3,990		
Pintail	100	100	100	100	100	200	200	200	11,200	10	64
Green-winged teal	20	20	20	20	20	210	210	210	5,810	2	14
Blue-winged teal	200	200	200	200	200	460	460	460	23,660	12	82
Cinnamon teal	20	20	20	20	20				1,400	2	14
Shoveler	30	30	30	30	30	100	100	100	4,550	4	24
Wood	10	10	10	10	10				700	1	8
Redhead	20	20	20	20	20	130	130	130	4,480		
Ring-necked	10	10	10	10	10	50	50	50	3,500		
Canvasback	10	10	10	10	10	90	90	90	2,590		
Scaup						100	100	100	2,100		
Goldeneye						40	40	40	840		
Bufflehead						30	30	30	630		
Ruddy									3,500	2	12
Other C. Merganser						60	60	60	1,610	59	381
Total Ducks.....	970	970	970	970	970	2380	2380	2380	126,980		
Coot:						60	60	60	2,260		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	0	0	0
Geese	16,646	511	283 0
Ducks	126,900	2,300	381
Coots	8,260	200	0

SUMMARY

Principal feeding areas Early, most birds fed on nearby grainfields. Later the reservoir provided both green browse and abundant aquatic food plants.

Principal nesting areas [illegible] provides most of the nesting.

Reported by Frank Kerney

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1750
Form Nk-1
(Rev. March 1953)

WATERFOWL

REFUGE Pablo National Wildlife Refuge MONTHS OF January TO April, 1967

(1) Species	(2) Weeks of reporting period 1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	ICE - NO WATERFOWL USE					25	25	25	25	11
Cackling										
Brant										
White-fronted										
Snow										
Blue										
~~Other~~ Total Geese						25	25	25	25	11
Ducks:										
Mallard						1,000	1,000	1,000	1,000	20
Black										
Gadwall										
Baldpate						100	100	100	100	10
Pintail						1,500	1,500	1,500	1,500	50
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead						250	250	250	250	
Ring-necked						50	50	50	50	
Canvasback						20	20	20	20	
Scaup						20	20	20	20	
Goldeneye						50	50	50	50	10
Bufflehead										
Ruddy										
Other Com. Merganser						500	500	500	500	100
TOTAL DUCKS						3,490	3,490	3,490	3,490	190
Coot:						*	-	-	-	-

3 -1250a
Cont. Mt-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Pablo National Wildlife Refuge MONTHS OF January TO April, 1967

(1) Species	(2) Weeks of reporting period 11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production Broods seen	Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	11	11	10	100	100	50	50		3,101		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
TOTAL GEESE	11	11	10	100	100	50	50		3,101		
Ducks:											
Mallard	20	20	100	300	500	400	200		38,920		
Black											
Gadwall					50				350		
Baldpate	10	10	20	50	50	75	100		5,075		
Pintail	50	50	200	200	250	100	50		48,650		
Green-winged teal			50	150	150	100	100		3,850		
Blue-winged teal											
Cinnamon teal											
Shoveler							50		350		
Wood											
Redhead					50	30	10		7,630		
Ring-necked					10	30	50		2,030		
Canvasback				10	30	20	20		1,120		
Scaup					10	20	20		910		
Goldeneye	10	10	10	20	20	10	10		2,100		
Bufflehead				20	20	30	50		840		
Ruddy							25		175		
Other Com. Merganser	100	100	100	100	100	75	50		19,075		
TOTAL DUCKS:	190	190	480	850	1,240	890	735		131,075		
Coot:			10	20	20	50	100		1,400		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	-	-	-
Geese	3,101	100	-
Ducks	131,075	3,490	-
Coots	1,400	100	-

SUMMARY

Principal feeding areas Nearby private and state-owned grain fields. Divers using reservoir toward end of period.

Principal nesting areas South and west shores.

Reported by Frank L. Kenney & Joseph P. Massoni
Refuge Managers

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Pablo Months of January to ~~May~~ April 195 X 67

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Rednecked grebe	4	4/7	10	4/12	Still	present				
Western grebe	2	4/10	20	4/12	"	"				
Great blue heron	Previous	period	30	1/7	"	"				
II. Shorebirds, Gulls and Terns:										
Killdeer	Prev.	Period	50	4/9	Still	present				
Common snipe	2	4/1	20	4/9	"	"				
California Gull	Previous	period	30	1/7	"	"				
Ring-billed Gull	"	"	500	1/7	"	"				
Yellowlegs	1	4/25	1	4/25	"	"				

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove								
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	Previous	Period	4	1/6	Still	present		
Duck hawk	"	"	2	3/17	"	"		
Horned owl	"	"	6	4/10	"	"		
Magpie	"	"	50	4/10	"	"		
Raven	"	"	2	3/17	"	"		
Crow	4	3/17	4	3/17	"	"		
Bald Eagle	Previous	Period	5	1/7	"	"		
Red-tailed Hawk	"	"	1	4/10	"	"		
Rough-legged Hawk	"	"	6	3/17	"	"		
Marsh Hawk	"	"	4	4/10	"	"		
Short-eared owl	"	"	6	3/17	"	"		

Reported by.....

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR--PORTLAND, OREGON

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge PABLO Months of May through August 1957

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common loon	Previous	Period	20	7/3	Still	Present	0	0	0	20
Red-necked Grebe	Previous	Period	30	6/15	"	"	1	15	45	75
Horned grebe	"	"	10	6/15	"	"	0	0	0	10
Western grebe	"	"	80	6/15	"	"	1	30	90	170
Double-crested cormorant	"	"	5	6/15	"	"	0	0	0	5
Great Blue Heron	"	"	20	6/15	"	"	0	0	0	20
II. Shorebirds, Gulls and Terns:										
Killdeer	Previous	Period	50	6/15	Still	Present	0	20	70	120
Blackbellied Plover	1	7/31	1	7/31	1	7/31	0	0	0	1
Common Snipe	Previous	Period	50	6/15	Still	Present	0	15	40	90
Greater yellolegs	"	"	40	7/31	"	"	0	Unknown	Unknown	40
Lesser yellowlegs	"	"	50	7/31	"	"	0	"	"	50
Avocet	"	"	10	7/31	"	"	0	4	10	20

(over)

(1)	(2)		(3)		(4)		(5)			(6)
III. Doves and Pigeons:										
Mourning dove	10	5/20	20	8/15	Still	Present	0	4	10	30
White-winged dove										
IV. Predaceous Birds:										
Golden eagle	Previous	Period	1	5/20	1	5/20	0	0	0	1
Duck hawk	"	"	2	8/15	Still	Present	0	0	0	2
Horned owl	"	"	2	8/15	"	"	0	1	4	6
Magpie	"	"	25	5/20	"	"	0	10	50	75
Raven	"	"	2	6/15	"	"	0	0	0	2
Crow	"	"	20	6/15	"	"	0	10	40	60
Red-tailed Hawk	"	"	2	6/15	"	"	0	1	2	4
Marsh Hawk	"	"	4	6/15	"	"	0	2	6	10
Osprey	1	7/31	1	7/31	"	"	0	0	0	1
Sparrow Hawk	Previous	Period	4	7/31	"	"	0	Unknown	Unknown	4
Short-eared Owl	"	"	4	7/31	"	"	0	2	4	6

Reported by Dave L. Kenney

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR--PORTLAND, OREGON

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Pablo Months of Sept. thru to Dec. 1967

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common Loon	Previous period									
Common Loon	Previous period		10	9/15	10	10/1				
Horned Grebe	"	"	10	9/30	10	9/30				
Red-necked Grebe	"	"	30	9/30	30	10/15				
Western Grebe	"	"	100	9/30	10	10/30				
Double Crst Cormt	"	"	5	9/15	5	9/15				
Great Blue Heron	"	"	20	10/1	Still Present					
II. Shorebirds, Gulls and Terns:										
Killdeer	Previous Period		50	9/15	10	10/15				
Common Snipe	"	"	100	9/15	10	11/1				
Greater Yellowlegs	"	"	40	9/15	40	9/30				
Lesser Yellowlegs	"	"	50	9/15	50	9/30				
Avocet	"	"	20	9/15	10	9/30				

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove	Previous Period		30	9/15	10	10/1		
White-winged dove								
IV. Predaceous Birds:								
Golden eagle								
Duck hawk	Previous Period		2	12/31	Still present			
Horned owl	"	"	2	12/31	"	"		
Magpie	"	"	70	10/1	"	"		
Raven	"	"	2	12/15	"	"		
Crow	"	"	30	10/15	10	10/30		
Red-tailed Hawk	"	"	1	10/1	1	10/1		
Marsh Hawk	"	"	2	10/1	Still	present		
Osprey	"	"	1	9/15	1	9/15		
Sparrow Hawk	"	"	1	9/15	Still	present		
Short-eared owl	"	"	4	11/15	"	"		
Bald Eagle	4	12/10	8	12/15	"	"		

Reported by Frank L. Kenney

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR--PORTLAND, OREGON

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Pablo For 12-month period ending August 31, 19 67

Reported by Frank L. Kenney Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	Acreage		(3) Use-days	(4) Breeding Population	(5) Production
	Crops	175	Ducks	1,994,335	80	381
	Upland	495	Geese	104,419	0	0
	Marsh	1,292	Swans	518	0	0
	Water	580	Coots	41,650	0	0
	Total	2,542	Total	2,140,922	80	381
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

(1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.

(2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

(3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.

(4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.

(5) **Production:** Estimated total number of young raised to flight age.

Interior Duplicating Section, Washington, D. C. 27580

3-175
Form 2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Pablo Months of ~~Sept. thru~~ to ~~Dec~~, 19 67

(1) * Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Cropland 175 hayland 15 grassland 480 670	2.2			1:2.5				300	Figure includes farm-raised pheasants released near refuge

* Only columns applicable to the period covered should be used.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-175
Form -2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge PABLO Months of MAY THRU AUGUST, 19 67

(1) * Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasants	cropland 175 haylands 15 grassland 480 670	2.2	20	100	1:2.5	0	0	0	300	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES:	Use correct common name.
(2) DENSITY:	Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
(3) YOUNG PRODUCED:	Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
(4) SEX RATIO:	This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
(5) REMOVALS:	Indicate total number in each category removed during the report period.
(6) TOTAL:	Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
(7) REMARKS:	Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-175
Form [illegible]2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Pablo Months of January to ~~May~~ April, 19 67

(1) * Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Croplands...175a Haylands.... 15a Grassland...480a 670	2.2			1:3.5				300	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Pablo Year ending April 30, 67

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5) Total Population
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control*	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
Meadow mouse	Grassland, Crop and hayland.....670	Unknown			None					None				Very high
Deer mouse	"	"			"					"				Moderate
Striped Skunk	"	"			"					"				"
Badger	"	"			"					"				Low
Columbia Ground Squirrel	"	"			"					"				Low
Weasel		"			"					"				Moderate
Muskrat	Water and Marsh ...1807	72		10				BIA	10	0	0	0	0	25
Mink	"	Unknown			none					None				Moderate
Beaver	"	900			None					None				2

* List removals by Predator Animal Hunter

REMARKS:

The extreme variations of some mammals from last year is due to the low water level.

Reported by [signature]

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

INTERIOR--PORTLAND, OREGON

3-175
Form [illegible]5
(April 1946)

DISEASE

Refuge ~~Pablo~~ Year 194~~6~~7

Botulism

Period of outbreak

Period of heaviest losses

Losses:

	Actual Count	Estimated
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Areas affected (location and approximate acreage)

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.

Conditions of vegetation and invertebrate life

Remarks No disease to report.

Lead Poisoning or other Disease

Kind of disease

Species affected

Number Affected

Species	Actual Count	Estimated

Number Recovered

Number lost

Source of infection

Water conditions

Food conditions

Remarks No disease to report.

NR

Bureau of Sport Fisheries and Wildlife

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge Pablo Calendar Year 1967

1. Visits

a. Hunting 0 b. Fishing 270 c. Miscellaneous 375 d. TOTAL VISITS 645

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl			
Upland Game			
Big Game			
Other			

Number of permanent blinds _____

Man-days of bow hunting included above _____

Estimated man-days of hunting on lands adjacent to refuge 1,000

1b. Fishing (area open to fishing on refuge lands)

TYPE OF AREA	ACRES	MILES
Ponds or Lakes		
Streams and Shores		4

1c. Miscellaneous Visits

Recreation 270 Official 65

Economic Use 40 Industrial _____

2. Refuge Participation (groups)

TYPE OF ORGANIZATION	NO. OF GROUPS	NUMBER IN GROUPS	NO. OF GROUPS	NUMBER IN GROUPS
Sportsmen Clubs				
Bird and Garden Clubs				
Schools				
Service Clubs				
Youth Groups				
Professional-Scientific				
Religious Groups				
State or Federal Govt.				
Other				

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases		Radio Presentations	
Newspapers (P.R.'s sent to)		Exhibits	
TV Presentations		Est. Exhibit Viewers	

3-1756
(Rev. 4/63)

INSTRUCTIONS

Item 1: Total of a, b, and c, equal d.

"Visit" - definition. Any person who is on refuge lands or waters during a day or part thereof for the purpose of: hunting, fishing, bird-watching, recreation, business or economic use, official visit, or similar interest. INCLUDE - those who stop within the refuge while traveling on a public highway because of an interest in the area. EXCLUDE - persons engaged in oil or other industry not directly related to the refuge, persons using refuge as most direct route or principal avenue of traffic, and those boating on navigable rivers or the Intercoastal Canal, unless they stop to observe wildlife on the refuge.

Computing visits. Where actual counts are impractical, "sampling" is used with midweek and week-end samples varied by season or weather. A conversion factor of 3.5 (of passengers per car) is used when accurate figures are not available. Each refuge will develop a conversion factor for boats based on range of usage. Count a camper once for each 24-hour period or fraction thereof.

Item 1a: Acres - of refuge open for each type of hunting.

Managed hunts require check in and out of hunters, issuance of permits, or assignment of blinds.

Other - INCLUDE crow, fox, and similar hunting.

Lands adjacent to refuge. Normally considered within 1 mile or less of boundary, unless established sampling procedures cover a wider area. For big game hunting, the distance may be greater.

Item 1b: Acres of streams open to fishing, if practical; otherwise just miles open. Information on "shores" is primarily for coastal fishing.

Item 1c: Recreation. INCLUDE photography, observing wildlife, picnicking, swimming, boating, camping, visitor center use, tours, etc. TOTAL Recreation, Official, and Economic Use visits under Item 1.

Industrial. INCLUDE persons engaged in industry, i.e., oil industry or factories. EXCLUDE these from Item 1.

Item 2: INCLUDE the "On Refuge" groups in Items 1c and 1. In "Off Refuge" column include only those group meetings in which refuge employees actually participate. EXCLUDE these from Items 1c and 1.

Item 3: Exhibits - INCLUDE displays, fairs, parades, and exhibits OFF the refuge; EXCLUDE those ON.

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Pablo County Lake State Montana

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
					All permits are issued and all cash receipts are received by the Bureau of Indian Affairs, Ronan, Montana				
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations _____ Haying Operations _____ Grazing Operations _____

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	70	250		480
				2. Other				
				1. Total Refuge Acreage Under Cultivation				
Hay - Wild				2. Acreage Cultivated as Service Operation				

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PESTICIDE APPLICATION

Refuge

Proposal Number Pablo

Reporting Year 1967

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
June 23	Canada Thustle	Southwest part of refuge	53	2-4D Amine	25 gallons	30:1	Water 2# acid equivalent per acre	Tank

10. Summary of results (continue on reverse side, if necessary)

The area sprayed was badly infested because highwater had prevented treatment the previous year. This treatment was 90% effective. In 1968, it is planned to spray the area directly east of this portion including the long spot protruding into the southwest part of the reservoir.

Summary of costs:

Material.....$55.00
Labor.....26.00
Equipment..... 18.00
Total.....$99.00

INTERIOR--PORTLAND, OREGON

1

Supervised by Ed Krantz and Bob McVey of the Bison Range, Job Corps personnel completely rebuilt 1,080 rods of boundary fences.

2

Tall grass and a long, dry summer spelled extreme fire hazard conditions. Bill Bradley, student assistant, planes one of the three barricades closing the refuge to all public use during the first two weeks of Sept.

3

Two young tourists found very good trout fishing below the Pablo reservoir outlet when irrigation demands caused a complete drawdown. These rainbows were planted as fingerlings only five months earlier.